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It seems a bit invidious to distinguish the other volume as *Résultats scientifiques*; but it may pass as a conventional title. The four hundred odd pages are occupied by the formal addresses, and papers volunteered for the Congress, twenty-six in number. They are therefore of unequal quality and of different character. Some are general summaries of the present status of important divisions of botanical science; others are special and technical. Only one comes from America—"A classification of Uredineae based on structure and development," by Dr. J. C. ARTHUR—and this is translated into German. The only English pages are those of Dr. D. H. SCOTT on "The fern-like seed-plants of the carboniferous flora." A good index makes available the entire contents. The two volumes should be in every botanical reference library.—C. R. B.

### Knuth's Handbook.

In 1899 the first volume of KNUTH'S *Handbuch der Blütenbiologie* appeared,<sup>3</sup> based on HERMANN MÜLLER'S *Die Befruchtung der Blumen durch Insekten*. It is general and deals with the structure of flowers and of insects in relation to pollination. In the same year the second volume appeared,<sup>4</sup> giving an account of all known observations upon the pollination of the flowers of arctic and temperate zones. The third and last volume was published after the death of KNUTH, under the editorship of LOEW, and deals similarly with plants from countries other than Europe. The Clarendon Press has undertaken the publication of an English translation, the first volume of which has lately appeared,<sup>5</sup> and the second volume is announced as being in press. The translator is J. R. AINSWORTH DAVIS, Trinity College, Cambridge, and the prefatory note is by Professor I. B. BALFOUR.

The character of this encyclopedic work is well known to students of pollination, and it is a great boon to English and American botanists to possess it in an English translation. The original text appeared in instalments, and the appendices of supplementary information have been incorporated in the body of the text by the translator. A special feature of the translation is the bringing together in one list all the citations in the original, and completing the record to January 1, 1904. The number of citations is almost beyond belief, the botanical titles in the bibliographical list reaching 3748. It must be said, however, that the citations are probably more numerous than significant, as a cursory examination suggests. There are frequent cases where "fertilization" is confused with "pollination," and papers cited which can hardly be imagined as belonging to the real literature of pollination. Then too, there is occasional duplication of titles, as for example titles 633 and 643, which are identical in every particular. The dreadful task of editing such a mass of citations should

<sup>3</sup> BOT. GAZETTE 28:280. 1899.

<sup>4</sup> BOT. GAZETTE 28:432. 1899.

<sup>5</sup> KNUTH, PAUL, Handbook of flower pollination. Translated by J. R. AINSWORTH DAVIS. Volume I. 8 vo. pp. xix+382. Oxford: Clarendon Press. 1906.

excuse many slips, but the serious question is as to the value of such a mass of undigested citations.

In any event, the translation is exceedingly welcome, and should go far toward stimulating a study to which American botanists pay scant attention.—J. M. C.

#### A New Zealand Manual.

IN 1864 Sir JOSEPH D. HOOKER published the first part of his *Handbook of the New Zealand Flora*, which belonged to a uniform series of floras contemplated for all the British colonies. In 1894 the late Mr. T. KIRK was engaged by the New Zealand government to prepare a *Student's Flora* of New Zealand, but at his death in 1897 barely two-fifths of this task had been completed. This fragment has since been published by the government, but the need for a complete and convenient flora was becoming so acute that in 1900 Mr. T. F. CHEESEMAM, curator of the Auckland museum, was appointed by the government to prepare a *Manual of the New Zealand Flora*, and this has now appeared.<sup>6</sup>

The instructions to the author included one to follow the general plan of HOOKER's *Handbook*, and another to include only indigenous plants. However, in an appendix the New Zealand families are arranged in the Engler and Prantl sequence; a list of the naturalized plants is also given, and a very long one it is. There is also an alphabetical list of Maori names of plants, and a full glossary. A most interesting and valuable contribution, contained among the introductory pages, is "A history of botanical discovery in New Zealand," from Cook's first visit in 1769 to the present year.

As is customary, only the vascular plants are included, and the range covered includes not only the two main islands of the Colony of New Zealand, but also the outlying groups of the Kermadec Islands, the Chatham Islands, the Auckland and Campbell Islands, Antipodes Island, etc. Macquarie Island is also included, although it belongs to Tasmania, because it is more closely allied in its flora to the Auckland and Campbell Islands than to any other land. The descriptions are in almost all cases original, and have been based upon the examination of living or dried material, extending through thirty-five years of continuous study and collection of the flora. Surely no one of larger experience could have been selected to do this work, which gives evidence throughout of most painstaking care and most orderly and clear presentation.

The composition of this flora makes it one of the most interesting on the globe, and hence a few general data concerning it will not be out of place. The volume includes the descriptions of 1571 species, only 156 of them being pteridophytes. The four largest families, with species numbering from 221 down to 113, are Compositae, Cyperaceae, Scrophulariaceae, and Gramineae; and the Compositae constitute one-seventh of the whole flora. The largest genus is *Veronica*,

<sup>6</sup> CHEESEMAM, T. F., *Manual of the New Zealand Flora*. 8vo. pp. xxxvi + 1199. Wellington: Published under the authority of the Government of New Zealand. 1906.